DOCUMENT RESUME

ED 121 014 95 EC 082 523

| | |
|---|---|
| AUTHOR | Khatena, Joe |
| TITLE | Major Directions in Creativity Research. |
| INSTITUTION | Council for Exceptional Children, Reston, Va. |
| SPONS AGENCY | National Inst. of Education (DHEW), Washington, D.C. |
| PUB DATE | Mar 76 |
| CONTRACT | NE-C-00-4-0004 |
| NOTE | 23p.; Paper presented at the Annual Convention of the Council for Exceptional Children (53rd, Los Angeles, California, April 24, 1975); Originally prepared for a panel discussion entitled "Creativity: Where Is It Going?" |
| AVAILABLE FROM | Council for Exceptional Children, 1920 Association Drive, Reston, Virginia 22091 ($4.00, publication no. 128) |
| EDRS PRICE | MF-$0.83 HC-$1.67 Plus Postage |
| DESCRIPTORS | *Creativity; *Creativity Research; Creativity Tests; Cross Cultural Studies; Definitions; Exceptional Child Research; *Gifted; Handicapped Children; Imagination; Measurement Techniques; *Research Reviews (Publications); Theories |

ABSTRACT

Reviewed are major directions in creativity research in the following areas: theories of creativity; definitions; instruments to measure creativity; nurturing creativity; the disabled, disturbed, and disadvantaged; cross cultural patterns; creative imagination imagery; and measuring creative imagination imagery. (LS)

**********
* Documents acquired by ERIC include many informal unpublished *
* materials not available from other sources. ERIC makes every effort *
* to obtain the best copy available. Nevertheless, items of marginal *
* reproducibility are often encountered and this affects the quality *
* of the microfiche and hardcopy reproductions ERIC makes available *
* via the ERIC Document Reproduction Service (EDRS). EDRS is not *
* responsible for the quality of the original document. Reproductions *
* supplied by EDRS are the best that can be made from the original. *
**********

ED121014

IMPRINT

One in a series of
special interest papers
from the
CEC Information Center

U S DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
NATIONAL INSTITUTE OF
EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

# MAJOR DIRECTIONS

# IN CREATIVITY RESEARCH

Joe Khatena

EC082523

This material was originally prepared for a panel discussion entitled "Creativity: Where is it going?" and presented at the 53rd Annual Convention of The Council for Exceptional Children and The Association for the Gifted, Los Angeles, California, April 24, 1975.

Published in March 1976 by The Council for Exceptional Children,
1920 Association Drive, Reston, Virginia 22091.

The development of this work was performed pursuant to Contract Number NE-C-00-4-0004 from the National Institute of Education, US Department of Health, Education, and Welfare. However, the opinions expressed herein do not necessarily reflect the position or policy of the National Institute of Education or The Council for Exceptional Children, and no official endorsement should be inferred.

# MAJOR DIRECTIONS IN CREATIVITY RESEARCH

Joe Khatena

The 1950's seem to be the cut of years differentiating the meager from the prolific investigatory activities in the area of creativity. Although creativity was of research interest and empirical investigations concerning creative genius may have sprung from Galton's study of hereditary genius, the exploration tended to pivot on philosophical speculation and anecdotal reports of creative mental functioning like Wallas' four step creative problem solving model (preparation, incubation, illumination, and revision), Grippen's study of the creative artistic imagination of children between the ages of 3 and 7, Rossman's studies of inventors, and Lehman's study dealing with problems of age and productivity.

Little had been done to measure the creative thinking abilities of children, adolescents, and adults except in terms of ingenuity and originality (e.g., Guilford, 1967; Torrance, 1962). It seems as if the lack of a scientific model for the study of creativity hindered the development of this discipline. Although the spirit of the times had its own share in energizing such study, Guilford's Presidential Address to the American Psychological Association in 1950 on the Structure of Intellect Model, with attention given to the hitherto neglected divergent thinking abilities within that model, appears to have lit the fuse for the explosion of knowledge and research in the area of creativity.

---

Dr. Joe Khatena is Professor of Education at Marshall University, Huntington, West Virginia. He is a contributing editor to the Gifted Child Quarterly and currently serves as First Vice President of the National Association for Gifted Children.

The development of creativity research has progressively accelerated over the years despite criticism from some quarters (e.g., McNemar, 1964; Thorndike, 1963; Wallach, 1968, 1973). This research has primarily been concerned with theory and definition of creativity relative to its identification and measurement with attendant problems, population differences, cross cultural patterns, and a few other directions of research.

## THEORY OF CREATIVITY

The complexity of the concept of creativity has been recognized by many in the field (e.g., Gowan, 1972; Roweton, 1973; Torrance, 1974) and has been the source of apprehension and misgivings especially in terms of its measurement correlates. There is considerable lack of agreement over the definition of the term (Torda, 1970), since the word "creativity" has through usage become associated with many aspects of creative behavior and mental functioning that range along a cognitive-emotive continuum. The problem of definition is compounded by variant descriptions of the energy source of creativity, each dependent on the several existing theoretical models of human functioning.

In addition, each person who takes an interest in creativity naturally gets interested in a particular way; that is, he or she enters the continuum at a particular point according to interest, need, obvious lacunae, compulsion, or for some other reason. Decisions to do particular pieces of research are thus subject to the very conditions often being researched, the interactive relationships between the cognitive and the emotive. This unholy welter has prompted Torrance to warn that creativity studies might not be popular for a while yet. But I do not believe we should be deterred. The more that is said and written about creativity, the more attention will have to be paid to it. We are going to make mistakes in identifying it and in interpreting it, but our

whole human existence is based on mistakes and their correction. The fact that so many people have so many ideas about creativity means we have a richer field to plow, and that is a cause for rejoicing.

Gowan's Theoretical Classification

Gowan (1972) has classified creativity along a continuum which ranges from rational to psychedelic. His breakdown is as follows:

1. Creativity as cognitive, rational, and semantic. This classification places creativity within the realm of problem solving and hearkens back to the studies of leaders such as Parnes and Guilford and others who have been interested in creativity as a component of intellect.
2. Creativity as personal and environmental relative to child rearing practices. Here the concern is more heavily weighted toward personality correlates that hinge upon originality, energy, and, in particular, self concept.
3. Creativity as a high degree of mental health. Studies with this orientation have been produced by figures such as Maslow and his school and emphasize openness to experience and antiauthoritarian influences.
4. Creativity as Freudian. Freud spoke of creativity as the sublimation of the sexual urge, which is a source of artistic activity and the main source of cultural energy, compensation, or the collective unconscious. From this base has sprung the candid neo-Freudian view -- that the Oedipal crisis which occurs during the narcissistic stage is the genesis of creative functioning. A variation of this theme views creative accomplishments as sublimations of aggressive, phallic, or incestuous desires and hence as refinements of basic drives and

primary processes. The preconscious is viewed as the source of man's creativity and its development is considered central.

Much of what Gowan said about creativity and the way we draw upon it is related to opening up the preconscious and bringing that material to the conscious level. He intimated that this activity is both governable and ungovernable, that there is both an "open sesame" which can be called on at will and a latent creative force which bubbles to the surface of its own volition.

5. Creativity as psychedelic. Here Gowan traces the connections between creativity and hypnotism, extrasensory perception, and other paranormal aspects such as precognition.

Gowan's classification is a comprehensive attempt at definition and a complex one. He has pooled together a complex body of literature and provided a useful framework for understanding it.

Roweton's Theoretical Classification

Roweton's efforts (1973) suggested six theoretical approaches to the interpretation of creative behavior: definitional, behavioristic, dispositional, humanistic, psychoanalytic, and operational. The psychoanalytic, humanistic, and operational approaches are quite similar to Gowan's Freudian, mental health, and cognitive classifications respectively, with the dispositional approach similar to Gowan's cognitive and mental health categories as described above.

According to Roweton, the definitional approach attempts to conceptualize what creativity is, and though not easily subjected to empirical verification, it often provides a rich source of testable hypotheses to experimental psychologists. The behavioristic approach to creativity leans heavily on

association and reinforcement theories with some attention being given to the effects of incubation and transfer. While my own approach to creativity is not a behavioral one, I believe it is important to point out the values of this perspective, which lends itself to a more parsimonious expression of what we mean by creativity because it is based on observed behaviors and performances. While inferences are not always easy to draw or deductions easy to make, the data are, at least, concrete.

## DEFINITION OF CREATIVITY AND INSTRUMENTATION

Since the understanding of the term creativity is dependent on its theoretical source, its definition has to be thought of in an appropriate context. Lack of agreement concerning definition of this term can be traced not only to the many different ways people can be creative, but also to the fact that explanations of these behaviors derive meaning in part from the referential theoretical models. Hence, there is need to describe and define operationally the particular credentials and/or abilities which people possess. From that point we need to press further toward the construction of instruments which measure the qualities described and defined, sometimes called the theoretical construct validities of the instrument.

Two definitions of creativity have been most productive of instrument development: (a) Guilford's divergent thinking and redefinition abilities as components of the Structure of Intellect Model, and (b) Torrance's definition of creativity as a process that involves sensing gaps or disturbing missing elements, forming hypotheses, communicating the results, and possibly modifying and retesting these hypotheses. To these may be added such definitions as the ability to generate or produce within some criterion of relevance many cognitive associates and many that are unique (Wallach & Kogan, 1965), and the power of

the imagination to break away from perceptual set so as to restructure ideas, thoughts, and feelings into novel and meaningful associative bonds (Khatena & Torrance, 1973).

## RESEARCH ON INSTRUMENTATION

Much of the measurement research on validity, reliability, and norms has resulted from the construction of the instruments themselves. This research is available to readers in test manuals and numerous published articles.

With the construction of measures of creativity, a greater awareness and sensitivity to attendant problems has arisen. Many studies over the past decade or so have been concerned with the problematic issues of measuring creativity which have pivoted around such concerns as definition, dimensionality, item sampling, scoring reliability, validity, conditions of test administration, useability, culture fairness and relevance, and norms (e.g., Anastasi & Schaefer, 1971; Guilford, 1971; Khatena, 1971c; Mackler & Shontz, 1965; Treffinger & Poggio, 1972; Yamamoto, 1966).

While often hypertechnical in nature, this literature is necessary as a kind of anchoring device. Unfortunately, much of this information is still widely scattered. The ERIC abstracts available through computer searches contain large gaps. Psychological Abstracts is enormously useful but not thoroughly comprehensive. Dissertation Abstracts helps fill some of the lacunae, but what is needed is a more centralized information servicing and disseminating operation which would combine what have heretofore been isolated systems.

## RESEARCH ON NURTURING CREATIVITY

Interest in the nurturing of creativity has been considerable. This has resulted in numerous studies on the effects of various training programs that have attempted to increase productive performance under different environmental

conditions of children, adolescents, and adults.

A comprehensive summary of the results of 142 studies that used the Torrance Tests of Creative Thinking as one of the criterion measures was reported by Torrance (1972a). Ways of teaching children to think creatively were classified as follows:

1. Training programs emphasizing the Osborn-Parnes problem solving procedures or some modification of them.
2. Other disciplined approaches such as training in general semantics or creativity research.
3. Complex programs involving packages of materials such as the Purdue Creativity Program; the Covington, Crutchfield, and Davies Productive Thinking Program; and the Myers and Torrance Ideabooks.
4. Programs using the creative arts as vehicles for teaching and practicing creative thinking.
5. Media and reading programs designed to teach and give practice in creative thinking.
6. Curricular and administrative arrangements designed to create favorable conditions for learning and practicing creative thinking.
7. Variables related to teachers and classrooms, indirect and direct control, and classroom climate.
8. Testing conditions designed to facilitate a higher level of creative functioning or more valid and reliable test performance.

Torrance's paper also contained a comprehensive and useful bibliography which will serve researchers and practitioners in the field to good effect.

## RESEARCH ON THE DISABLED, DISTURBED, AND DISADVANTAGED

Another viable area of research on creativity attempts to extend knowledge

of the creative mental functioning of retarded children, blind and deaf children, emotionally disturbed children, and disadvantaged children, and to determine what can be done to facilitate their growth and productivity (e.g., Bruch, 1975; Cooper, 1973; Halpin, Halpin & Torrance, 1973; Johnson, 1974; Johnson & Khatena, in press; Kaltsounis, 1969; Khatena, 1971d; Peters & Torrance, 1972; Turner, 1972).

## CROSS CULTURAL RESEARCH

There has also been a growing interest in cross cultural research which can largely be associated with the initial and comprehensive research of Torrance. In a paper summarizing creativity research at the University of Georgia during the period 1966 to 1973, Torrance (1973) reported on cross cultural research with subjects in grades 1 through 6 drawn from schools in Western Samoa, Norway, India, West Germany, and the segregated Black culture of the United States. He commented on continuity and discontinuity features in creative mental functioning and development relative to various cultural groups.

Other cross cultural creativity research done by Torrance's students at the University of Georgia includes studies on bilingualism as it affects the creative chinking abilities of Mexican youth (Carringer, 1972); sex differences in creative development (Coone, 1968); conception of situational causality in India, Western Samoa, Mexico, and the United States (Langgulang, 1971); development of causal thinking of Mexican and United States children (Langgulang & Torrance, 1972); originality of the Thais and Chinese (Rungsinan, 1972); and creative and causal thinking skills relative to Mexican student-faculty perception of situational causality (Walker, Torrance, & Walker, 1971).

RESEARCH ON CREATIVE IMAGINATION IMAGERY

Relatively little research has been done on imagery, especially as it relates to the creative imagination. One of the major causes for this can be traced to its rejection by Watson and the ascendency of behaviorism in the 1920's. The readmission of imagery as an appropriate subject of study in psychology after 30 years of ostracism followed renewed interest by American psychologists in cognitive processes in the early 1950's (Holt, 1964; Richards 1969). The renewal of interest in imagery may be due to the view that images are indirect reactivations of earlier sensory or perceptual activity rather than mental mechanisms (Bugelski, 1970). However, this resurgence of interest in imagery tended to confine itself to the study of after imagery, eidetic imagery, and memory imagery (Pavio, 1971; Richardson, 1969). Studies on imagination imagery have related to the following:

- Hypnagogic imagery: Imagery which comes in the semidream state between sleep and wakefulness.
- Perceptual isolation imagery: Imagery which occurs when external stimuli are radically reduced under controlled conditions.
- Hallucinogenic drug imagery: Chemically induced images from such drugs as LSD, peyote, and mescaline.
- Photic stimulation: Any relatively slow, rhythmic visual stimulation that induces a trancelike state or drowsiness that may, in turn, facilitate image formation.
- Pulse current imagery: Imagery induced by electrical impulses externally applied to the temples to stimulate the appearance of imagery.
- Non-drug-induced hallucination: Imagery such as that experienced by schizophrenics, mystics, and shamans.

Common to all these studies is the reduction of external stimuli operating on an individual to a level that frees him or her to attend to an inner world of stimulus events and allows the subject to experience imagination imagery (Richardson, 1969). However, the need to study types of creative imagination imagery hitherto neglected has been stressed by both Richardson (1969) and Pavio (1971). Richardson cited only two studies done on the creative correlates of imagination imagery, one on perceptual isolation and its positive consequences on Guilford's measures of creativity (Kubzanski, 1961) and the other on the facilitatory effects of LSD on creative problem solving (Harman, McKim, Mogar, Fadiman, & Stolaroff, 1966).

Since then, several other studies on imagination imagery as it relates to creativity have been done. For instance, MacKinnon (1971) investigated imagery production under the effects of hypnosis; Krippner, Dreistadt, and Hubbard (1972) summarized and discussed a group of studies that attempted to relate the right or nondominant hemisphere of the brain to the creative person's experience of nonordinary reality through hypnosis, visual imaging processes, psychedelic drugs, dreams, extrasensory perception, and self actualization. On the subject of hypnosis, creativity, and the imagination, two comprehensive reviews have documented the area: one by Bowers and Bowers (1970) and the other by Sheehan (1972).

Leonard and Lindauer (1973) explored the relationship of aesthetic activities, imagery arousal, and creativity correlates. Torrance (1972b) studied the tendency of adolescents and young adults to produce images of unusual visual perspective on the repeated figures activity of the Torrance tests as a predictor of creative achievement. In addition, a few other papers have attempted to find relationships between creative talents in music and the ability to produce original verbal images (Torrance & Khatena, 1969), and

between personality characteristics, activities, and attitudinal patterns and the production of original verbal images (Khatena & Torrance, 1971, 1973).

Two papers which have added to the growing interest in the area of creative imagination relate to source material in discovery by analogy (Gordon, 1974) and metaphorical thinking and the production of similies (Schaefer, 1975). Studies have also dealt with the creative imagination and imagery-analogy correlates (Khatena, 1975) and the production of original verbal images by deaf and hearing children (Johnson & Khatena, in press).

## MEASURING CREATIVE IMAGINATION IMAGERY

A major problem in studying the function of imagination and imagery has been the lack of objective measures. Although the need for appropriate instrumentation has not ceased, it has been relieved in part by the construction and development of instruments that attempt to measure creative abilities (e.g., Guilford, 1967; Torrance, 1974). Although Guilford and Torrance did not directly attempt to measure the creative imagination in terms of its imagery correlates, the measures they produced did suggest that the study of imagination imagery might begin with the study of creative abilities. Measures of creative components of intellectual functioning now exist, and these have prepared the way for the study of creative imagination imagery. Of particular value to the study of creative imagination imagery have been two measures of verbal originality, Onomatopoeia and Images and Sounds and Images, now available as a test battery entitled Thinking Creatively with Sounds and Words (Torrance, Khatena, & Cunnington, 1973).

### Verbal Imagery

Studies on the creative imagination and its imagery correlates have been

approached in a number of ways. Several experimental studies examined the effects of teaching college adults to think more creatively upon their production of original verbal images, scored for originality by the principle of statistical infrequency and relevance (Khatena, 1970a, 1970b, 1973c; Khatena & Barbour, 1972; Khatena & Parnes, 1974). Results have generally been favorable. Two of these studies explored the effects of creative levels upon training adults to produce original verbal images and analogies as well, and found that both creative and less creative people benefit from training to think in creative ways (Khatena, 1973a).

Several other experimental studies investigated the differential effects on production of original verbal images produced by presenting onomatopoeic stimuli to adults, adolescents, and children at fixed and variable time intervals (Khatena, 1970a, 1971a, 1972b, 1973d, 1973e). The results of these five studies indicate that when the time interval is fixed, the imaginations of adult subjects function effectively to produce original verbal images given sufficient warm-up, and that the imaginations of children and adolescents are sensitized more rapidly to produce original verbal images. Further, when the time interval is varied, and subjects are identified as high, moderate, and low creatives, the imaginations of high creative adults and children operate best in producing original verbal images when given moderate time deadlines, whereas the imaginations of high creative adolescents function best when given as much time as needed.

To these studies may be added two cross sectional developmental studies relative to the production of original verbal images by children between the ages of 8 and 19 (Khatena, 1971b) and between the ages of 9 and 19 (Khatena, 1972a). Results from these studies indicate that drops do occur in the development of the imagination and its original verbal image correlates between

grades 3 and 12 or between ages 8 and 19. The period that seems to stand out is the upper elementary grades--grades 4 to 6 or between the ages of 9 and 11. A longitudinal study was also done with the same children producing original verbal images over a four year period beginning at the age of 8 years (Khatena & Fisher, 1974). The findings provided support to the earlier observation that some loss in verbal image production appears to occur in children at the ages of 9 and 10 years and a gain occurs at 11 years.

Analogy and Image Structure

Two studies were concerned with the production of personal, direct, symbolic, and fantasy analogies with simple and complex image structures by high original college adults and children (Khatena, 1972c, 1973b). The results of the adult study showed that highly original men and women significantly preferred to use the direct analogy form and simple rather than complex image structure. The study with children showed that highly original boys and girls at all age levels significantly preferred to use the simple image, direct analogy form as well, with boys producing complex images somewhat more frequently than girls. Further, it was found that as original children grew older, the number of direct simple image analogies produced decreased with a corresponding increase in the number of complex images produced. Peak productivity in terms of the simple image with corresponding reversal of the complex image occurred at the age of 12 years for boys and 13 years for girls.

Yet another study (Johnson & Khatena, in press) on the production of original verbal images by deaf and hearing children between the ages of 10 and 19 years found that hearing subjects produced significantly more original verbal images than deaf subjects, and that while hearing children did not show any clear improvement as they grew older, deaf children showed significant

improvement with age.

## SOME RESEARCH DIRECTIONS ON CREATIVE IMAGINATION IMAGERY

Creative imagination imagery offers many research openings for better understanding of the process of mental functioning which may lead to favorable consequences relative to diagnosis, counseling, remedial treatment, and educational intervention. Studies may be undertaken to explore various personality structures such as rigidity versus flexibility, open versus closed mindedness, and external versus internal locus of control as they relate to creative imagination imagery.

Moreover, investigations need to be done on the relationship of creative mental functioning and vividness of imagery in the several sense modalities on the one hand, and of controlled versus autonomous imagery on the other. Imagination imagery as produced by children, adolescents, and adults along continua of intellectual potency, mental health, and emotional stability offers yet other approaches. Exploration of cultural and subcultural variations in the production of imagination imagery along a continuum of sufficiency and deprivation may also be done. It is important to realize that research in the area of imagination imagery hitherto difficult to investigate may now be attempted under conditions that are scientifically appropriate and with a much better chance of producing valid conclusions.

REFERENCES

Anastasi, A., & Schaefer, C. E. Note on the concepts of creativity and intelligence. Journal of Creative Behavior, 1971, 5(2), 113-116.

Bowers, K. S., & Bowers, P. G. Hypnosis and creativity: A theoretical and empirical rapproachment (Research Report No. 11). Unpublished manuscript, University of Waterloo, 1970.

Bruch, C. B. Assessment of creativity in culturally different children. Gifted Child Quarterly, 1975, 19, 164-174.

Bugelski, B. R. Words and things and images. American Psychologist, 1970, 25, 1002-1012.

Carringer, D. C. The relationship of bilingualism to the creative thinking abilities of Mexican youth. Unpublished doctoral dissertation, University of Georgia, 1972.

Coone, J. G. A cross-cultural study of sex differences in creative development. Unpublished doctoral dissertation, University of Georgia, 1968.

Cooper, J. B. The relationship between creativity and intelligence in the educable mentally retarded child. Unpublished doctoral dissertation, University of Georgia, 1973.

Gordon, W. J. J. Some source material in discovery-by-analogy. Journal of Creative Behavior, 1974, 8(4), 239-257.

Gowan, J. C. Development of the creative individual. San Diego CA: Robert R. Knapp, 1972.

Guilford, J. P. The nature of human intelligence. New York: McGraw-Hill, 1967.

Guilford, J. P. Some misconceptions regarding measurement of creative talents. Journal of Creative Behavior, 1971, 5(2), 77-87.

Halpin, G. M., Halpir, W. G., & Torrance, E. P. Effects of blindness on creative thinking abilities of children. Developmental Psychology, 1973, 9, 268-274.

Harman, W. W., McKim, R. H., Mogar, R. E., Fadiman, J., & Stolaroff, M. J. Psychedelic agents in creative problem solving: A pilot study. Psychological Reports, 1966, 19, 211-227.

Holt, R. R. Imagery: The return of the ostracized. American Psychologist, 1964, 19, 254-264.

Johnson, R. A. Differential effects of reward versus no-reward instructions on the creative thinking of two economic levels of elementary school children. Journal of Educational Psychology, 1974, 66(4), 530-533.

Johnson, R. A., & Khatena, J. Comparative study of verbal originality in deaf and hearing children. Perceptual and Motor Skills, in press.

Kaltsounis, B. Impact of instruction on development of deaf children's originality of thinking. Perceptual and Motor Skills, 1969, 29, 298.

Khatena, J. Repeated presentation of stimuli and production of original responses. Perceptual and Motor Skills, 1970, 30, 91-94.(a)

Khatena, J. Training college adults to think creatively with words. Psychological Reports, 1970, 27, 279-281.(b)

Khatena, J. Adolescents and the meeting of time deadlines in the production of original verbal images. Gifted Child Quarterly, 1971, 15, 201-204.(a)

Khatena, J. Production of original verbal images by children between the ages of 8 and 19 as measured by the alternate forms of Onomatopoeia and Images. Proceedings of the 79th Annual Convention of the American Psychological Association, 1971, 187-188.(b)

Khatena, J. Some problems in the measurement of creative behavior. Journal of Research and Development in Education, 1971, 4(3), 74-82.(c)

Khatena, J. Teaching disadvantaged preschool children to think creatively with pictures. Journal of Educational Psychology, 1971, 62(5), 384-386.(d)

Khatena, J. Development patterns in production by children aged 9 to 19 of original images as measured by Sounds and Images. Psychological Reports, 1972, 30, 649-650.(a)

Khatena, J. Original verbal images of children as a function of time. Psychological Reports, 1972, 31, 565-566.(b)

Khatena, J. The use of analogy in the production of original verbal images. Journal of Creative Behavior, 1972, 6(3), 209-213.(c)

Khatena, J. Creative level and its effects on training college adults to think creatively with words. Psychological Reports, 1973, 32, 336.(a)

Khatena, J. Imagination imagery by children and the production of analogy. Gifted Child Quarterly, 1973, 17, 98-102.(b)

Khatena, J. Imagination imagery and original verbal images. Art Psychotherapy, 1973, 1, 113-120.(c)

Khatena, J. Production of original verbal images by college adults to variable time intervals. Perceptual and Motor Skills, 1973, 36, 1285-1286.(d)

Khatena, J. Repeated presentation of stimuli and production of original responses by children. Perceptual and Motor Skills, 1973, 36, 173-174.(e)

Khatena, J. Creative imagination imagery. Gifted Child Quarterly, 1975, 19, 149-160.

Khatena, J., & Barbour, R. L. Training music majors in college to think creatively with sounds and words, Psychological Reports, 1972, 30, 105-106.

Khatena, J., & Fisher, S. A four year study of children's responses to

onomatopoeic stimuli. Perceptual and Motor Skills, 1974, 39, 1062.

Khatena, J., & Parnes, S. J. Applied imagination and the production of original verbal images. Perceptual and Motor Skills, 1974, 38, 130.

Khatena, J., & Torrance, E. P. Attitude patterns and the production of original verbal images: A study in construct validity. Gifted Child Quarterly, 1971, 15, 117-122.

Khatena, J., & Torrance, E. P. Thinking Creatively with Sounds and Words: Norms-technical manual (Rev. ed.). Lexington MA: Personnel Press, 1973.

Krippner, S., Dreistadt, R., & Hubbard, C. C. The creative person and non-ordinary reality. Gifted Child Quarterly, 1972, 16, 203-228; 234.

Kubzanski, P. E. Creativity, imagery and sensory deprivation. Acta Psychologia, 1961, 19, 507-508.

Langgulang, H. A cross-cultural study of the child's conception of situational causality in India, Western Samoa, Mexico, and the United States. Doctoral dissertation, University of Georgia, 1971.

Langgulang, H., & Torrance, E. P. The development of causal thinking of children in Mexico and the United States. Journal of Cross-Cultural Psychology, 1972, 3, 315-320.

Leonard, G., & Lindauer, M. S. Aesthetic participation and imagery arousal. Perceptual and Motor Skills, 1973, 36, 977-978.

Mackler, B., & Shontz, F. C. Creativity: Theoretical and methodological considerations. Psychological Record, 1965, 15, 217-238.

MacKinnon, D. W. Creativity and transliminal experience. Journal of Creative Behavior, 1971, 5(4), 227-241.

McNemar, Q. Lost: Our intelligence? Why? American Psychologist, 1964, 18, 871-882.

Pavio, A. Imagery and verbal processes. New York: Holt, Rinehart & Winston, 1971.

Peters, R. W., & Torrance, E. P. Effects of triadic interaction on performance of five year old disadvantaged children. Psychological Reports, 1972, 30, 747-750.

Richardson, A. Mental imagery. New York: Springer, 1969.

Roweton, W. E. Creativity: A review of theory and research (Occasional Paper No. 7). The Creative Education Foundation, 1973.

Rungsinan, W. A study of the scoring of originality of creative thinking on Thai and Chinese cultures. Unpublished master's thesis, University of Georgia, 1972.

Schaefer, C. E. The importance of measuring metaphorical thinking in children. Gifted Child Quarterly, 1975, 19, 140-148.

Sheehan, P. W. Hypnosis and the manifestations of imagination. In E. Fromm & R. E. Shor (Eds.), Hypnosis: Research developments and perspectives. New York: Aldine Atherton, 1972.

Thorndike, R. L. The measurement of creativity. Teachers College Record, 1963, 44, 422-424.

Torda, C. Some observations on the creative process. Perceptual and Motor Skills, 1970, 31, 107-126.

Torrance, E. P. Guiding creative talent. Englewood Cliffs NJ: Prentice-Hall, 1962.

Torrance, E. P. Can we teach children to think creatively? Journal of Creative Behavior, 1972, 6(2), 114-143.(a)

Torrance, E. P. Tendency to produce unusual visual perspective as a predictor of creative achievement. Perceptual and Motor Skills, 1972, 34, 911-915.(b)

Torrance, E. P. Cross-cultural studies of creative development in seven selected societies. The Educational Trends, 1973, 8(1-4), 28-38.

Torrance, E. P. Torrance Tests of Creative Thinking: Norms-technical manual. Lexington MA: Personnel Press, 1974.

Torrance, E. P., & Khatena, J. Originality of imagery in identifying creative talent in music. Gifted Child Quarterly, 1969, 13, 3-8.

Torrance, E. P., Khatena, J., & Cunnington, B. F. Thinking Creatively with Sounds and Words (Child & adult versions). Lexington MA: Personnel Press, 1973.

Treffinger, D. J., & Poggio, J. P. Needed research on the measurement of creativity. Journal of Creative Behavior, 1972, 6(4), 253-267.

Turner, S. M. The effects of frustration, sex, mode of behavior, and organicity on nonverbal creative thinking of emotionally disturbed children. Unpublished doctoral dissertation, University of Georgia, 1972.

Walker, P. C., Torrance, E. P., & Walker, T. S. A cross-cultural study of the perception of situational causality. Journal of Cross-Cultural Psychology, 1971, 2, 401-404.

Wallach, M. A. Review of the Torrance Tests of Creative Thinking. American Educational Research Journal, 1968, 5, 272-281.

Wallach, M. A. Ideology, evidence and creativity research. Contemporary Psychology, 1973, 18, 162-164.

Wallach, M. A., & Kogan, N. Modes of thinking in young children. New York: Holt, Rinehart & Winston, 1965.

Yamamoto, K. Do creativity tests really measure creativity? Theory Into Practice, 1966, 5, 194-197.